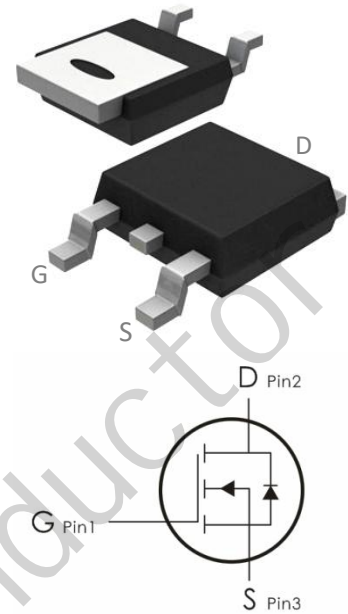## Description：

This N-Channel MOSFET uses advanced SGT technology and design to provide excellent $R_{DS(on)}$ with low gate charge. It can be used in a wide variety of applications.

Features：

1) V_{DS}=100V,I_D=55A,$R_{DS(ON)}$<12mΩ @V_{GS}=10V

2) Low gate charge.

3) Green device available.

4) Advanced high cell denity trench technology for ultra low $R_{DS(ON)}$.

5) Excellent package for good heat dissipation.

Absolute Maximum Ratings： (T$_C$=25℃ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	$\pm$20	V
I_D	Continuous Drain Current[1]	55	A
$I_{D, pulse}$	Pulsed drain current[2]	165	A
I_S	Continuous diode forward current[1]	55	A
$I_{S, pulse}$	Diode pulsed current[2]	165	A
P_D	Continuous-Source Current[3]	115	W
E_{AS}	Single pulsed avalanche energy[5]	14	mJ
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	℃

Thermal Characteristics：

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance,Junction to Case	1.09	℃/W
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient[4]	62	℃/W

Electrical Characteristics： (T$_C$=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV$_{DSS}$	Drain-Sourtce Breakdown Voltage	V$_{GS}$=0V,I$_D$=250 μ A	100	---	---	V
I$_{DSS}$	Zero Gate Voltage Drain Current	V$_{GS}$=0V, V$_{DS}$=100V	---	---	1	μ A
I$_{GSS}$	Gate-Source Leakage Current	V$_{GS}$=± 20V, V$_{DS}$=0A	---	---	± 100	nA
R$_G$	Gate resistance	f=1 MHz, Open drain	---	---	3	Ω
On Characteristics						
V$_{GS(th)}$	GATE-Source Threshold Voltage	V$_{GS}$=V$_{DS}$, I$_D$=250 μ A	1.5	---	2.5	V
R$_{DS(ON)}$	Drain-Source On Resistance	V$_{GS}$=10V,I$_D$=30A	---	10	12	m Ω
		V$_{GS}$=4.5V,I$_D$=12A	---	12	15	m Ω
Dynamic Characteristics						
C$_{iss}$	Input Capacitance		---	1550	---	
C$_{oss}$	Output Capacitance	V$_{DS}$=25V, V$_{GS}$=0V, f=1MHz	---	680	---	pF
C$_{rss}$	Reverse Transfer Capacitance		---	65	---	
Switching Characteristics						
t$_{d(on)}$	Turn-On Delay Time		---	16	--	ns
t$_r$	Rise Time	V$_{Ds}$=50V, I$_D$=25A,	---	4	---	ns
t$_{d(off)}$	Turn-Off Delay Time	V$_{GS}$=10V,R$_G$=2Ω	---	35.6	---	ns
t$_f$	Fall Time		---	5.8	---	ns
Q$_g$	Total Gate Charge		---	24.6	---	nC
Q$_{gs}$	Gate-Source　Charge	V$_{GS}$=10V, V$_{DS}$=50V,	---	4.1	---	nC
Q$_{gd}$	Gate-Drain "Miller" Charge	I$_D$=25A	---	5.8	---	nC
V$_{plateau}$	Gate plateau voltage		---	3.1	---	V

Drain-Source Diode Characteristics

V_{SD}	Source-Drain Diode Forward Voltage	V_{GS}=0V,I_S=30A	---	---	1.3	V
trr	Reverse Recovery Time	V_R=50V,I_S =25 A dI_{SD}/dt = 100 A/μ s	---	53.2	---	Ns
qrr	Reverse Recovery Charge			52.5	---	Nc
Irrm	Peak reverse recovery current		---	1.7	---	A

Notes:

1) Calculated continuous current based on maximum allowable junction temperature.
2) Repetitive rating; pulse width limited by max. junction temperature.
3) Pd is based on max. junction temperature, using junction-case thermal resistance.
4) The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with T_a=25 °C.
5) V_{DD}=50 V,V_{GS}=10 V, L=0.3 mH, starting T_j=25 °C.

Typical Characteristics： (T_C=25℃ unless otherwise noted)
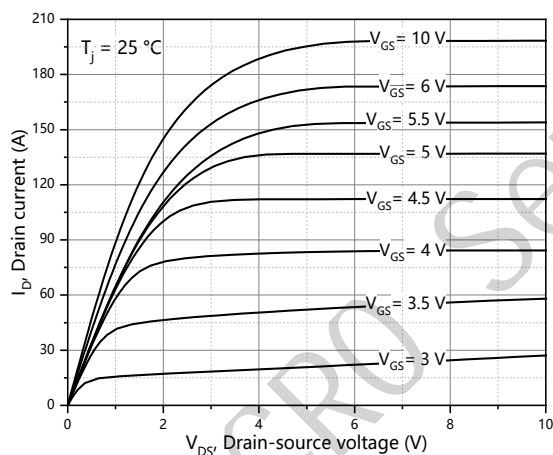
Figure 1. Typ. output characteristics
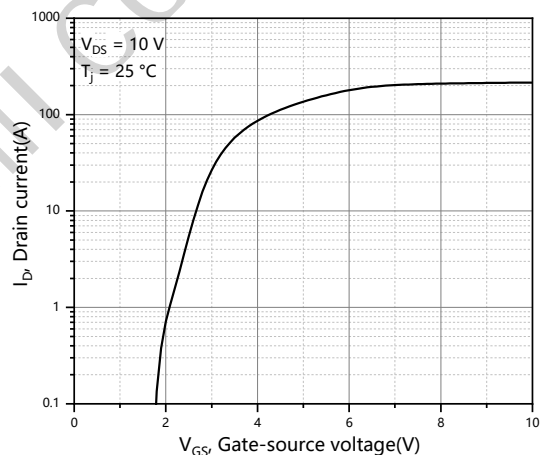
Figure 2. Typ. transfer characteristics
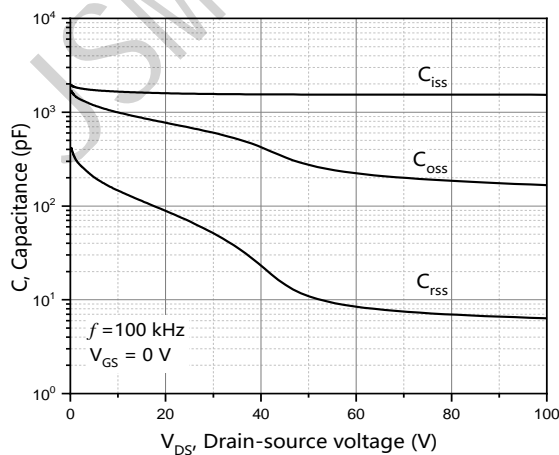
Figure 3. Typ. capacitances
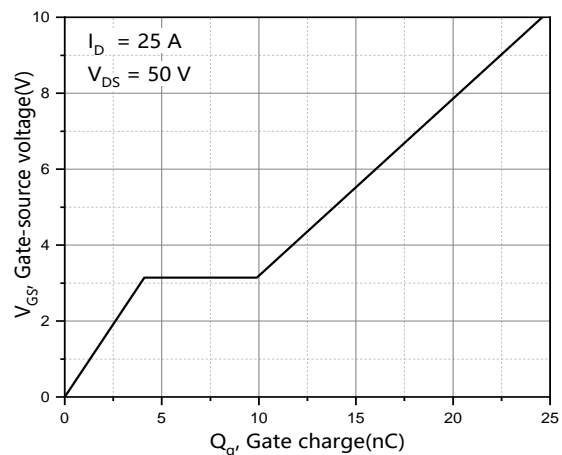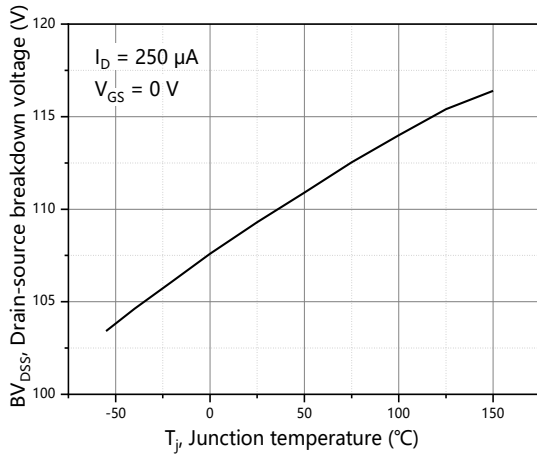

Figure 4. Typ. gate charge
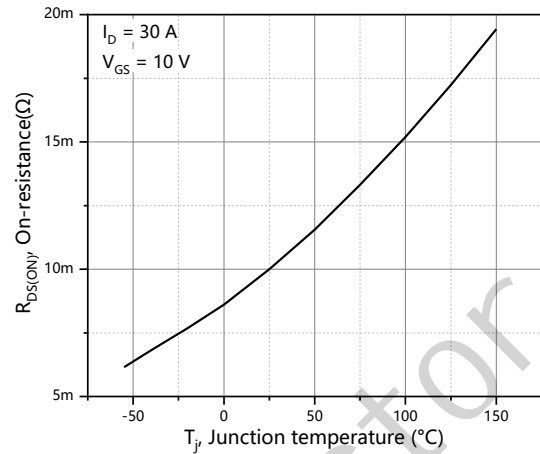
Figure 5. Drain-source breakdown voltage

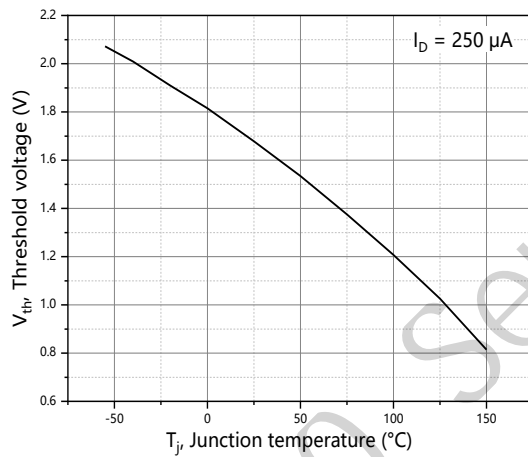Figure 6. Drain-source on-state resistance
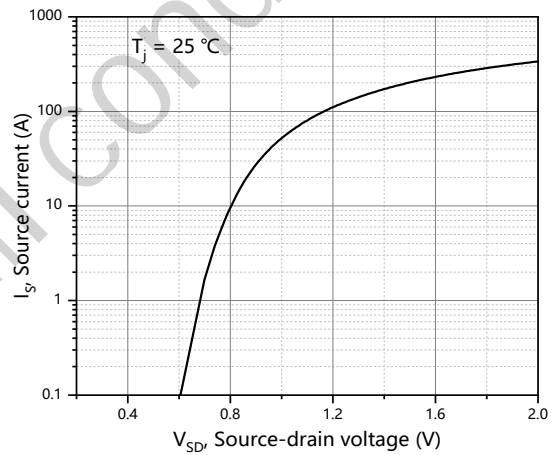
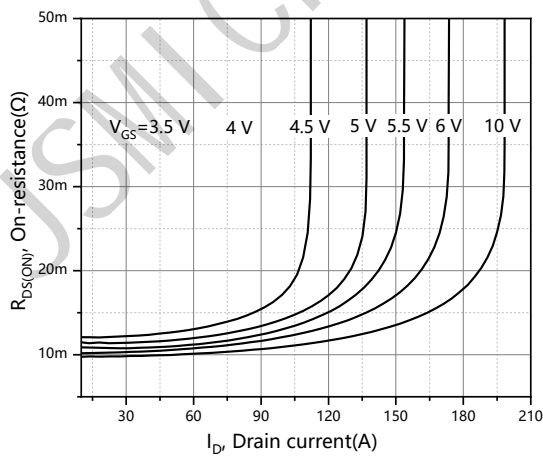Figure 7. Threshold voltage

Figure 8. Forward characteristic of body diode

Figure 9. Drain-source on-state resistance

Figure 10. Drain current
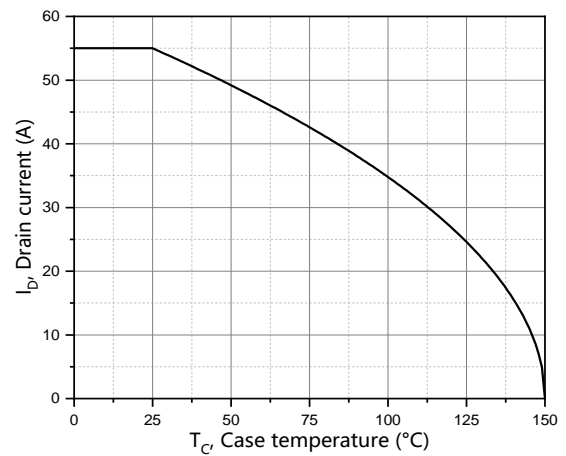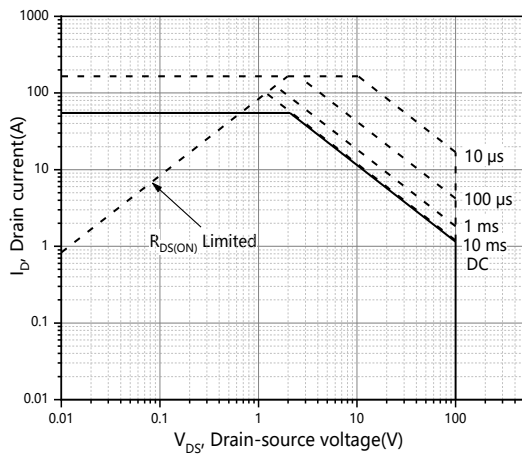
Figure 11. Safe operation area T$_C$=25 °C
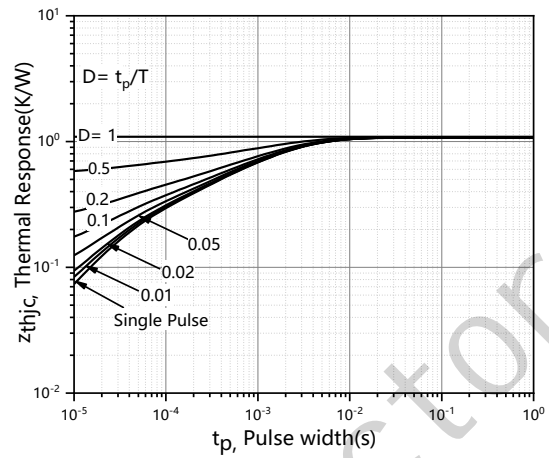
Figure 12. Max transient thermal impedance

TO-252 Package Dimensions

UNIT：mm

SYMBOL	min	nom	max	SYMBOL	min	nom	max
A	6.40		6.60	D	2.90		3.10
A1	5.20		5.40	D1	0.45		0.55
A2	4.40		4.60	D2	0.45		0.55
A3	4.40		4.60	e		2.30	
A4	0		0.15	E	2.20		2.40
A5	4.65		4.95	F	0.45		0.55
B	5.90		6.20	G		1.70	
B1	1.57		1.77	L	1.40		1.60
C	0.90		0.96	θ（度）	0		10.00
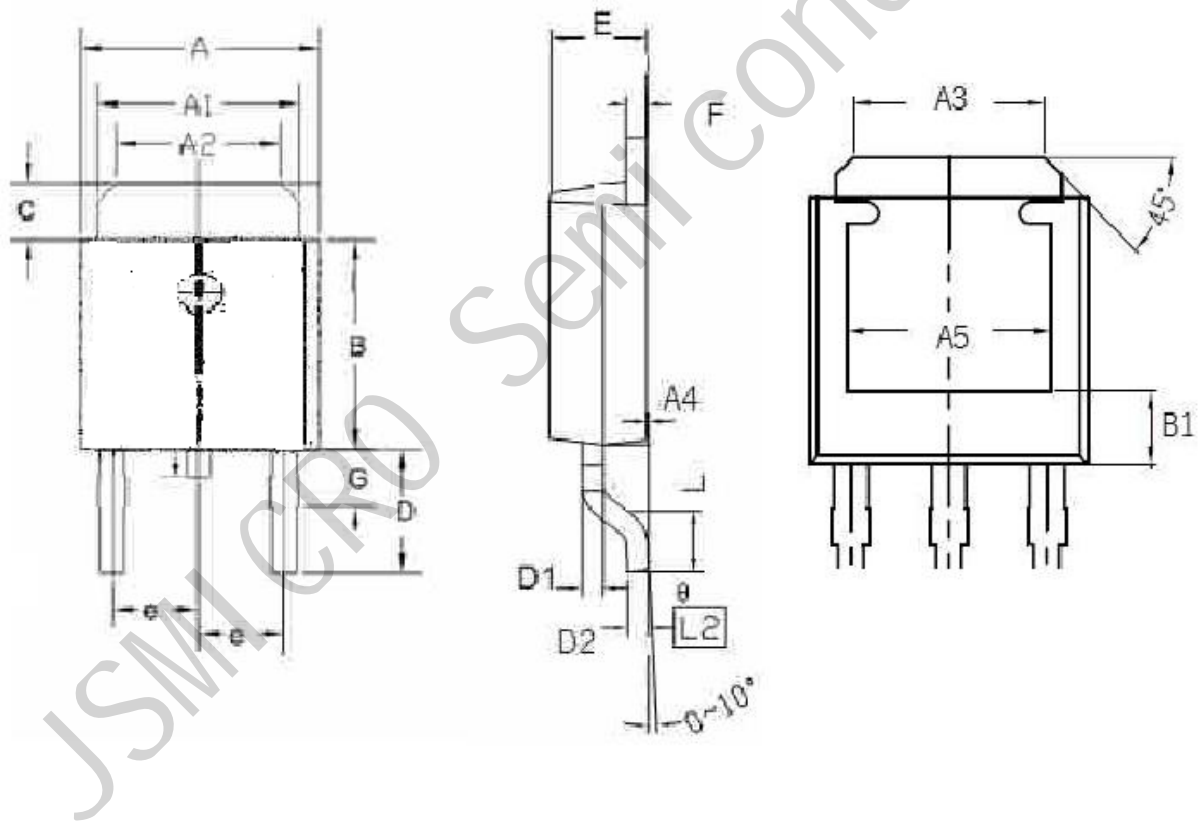
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